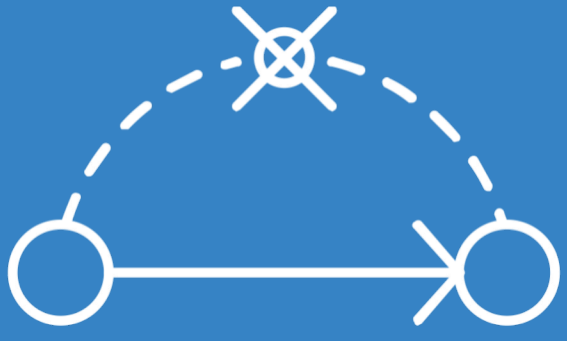
The Direct Path Principle

How to Sidestep Complexity in Electronic Work Instructions for Immediate KPI Gains



ANARK®

Introduction

Digital manufacturing transformations are often viewed as complex, prohibitively expensive projects that take years to implement.

In truth, however, there are digital initiatives that offer a very direct path to value.

By ‘direct path’, we mean taking an iterative approach to digital manufacturing beginning with initiatives where ROI and KPI gains are predictable and achievable within a relatively short time frame.

The direct path is about breaking down complex digital transformation projects into smaller, manageable chunks that can be acted upon now, with a short payback timeline.

Automating your work instructions process is one such ‘chunk,’ and is the subject of this report.

We’ll show you what the direct path looks like in practice and share real-world examples of the gains it brings manufacturers.

Taking the time to understand this path will help any manufacturing organization:

1. envision how much cleaner and simpler your work instructions process can look when you follow the direct path,
2. discover the ROI and KPI outcomes that come when you move from manual to automated electronic work instructions (EWIs),
3. understand the benefits that ripple through the organization and make it easier to gain buy-in from internal stakeholders, and
4. reframe assumptions about the complexity of connecting documents and interactions across a digital thread.

Take an Iterative Approach to Digital Manufacturing

Adopting an iterative attitude toward strategy can be just the right medicine for overcoming misperceptions that sometimes derail strategic problem solving and planning.

For manufacturers, these misperceptions center around the idea that all digital transformation projects are complex, arduous and expensive. It pays to consider how you might challenge such assumptions, by asking questions that help orient your team to finding a faster path to value.

In their report, "Adopt an Iterative Approach to Define Strategy at the Speed of Digital Business",[1] Gartner® asks a question:

"What if an initial version of the strategy could be created in a much shorter time using the information that was available then?"

We suggest that applying this kind of question to your work instructions environment gives rise to some promising, and profitable, scenarios.

For example:

- **What if we could author instructions in the way that operators want to consume them?**
- **What if we could leverage interactive 3D engineering data directly in work instruction without requiring meetings with the design engineer?**
- **What if our people could ask questions and get answers in the context of the work instructions themselves, without having to go to outside channels like email?**

1) "Adopt an Iterative Approach to Define Strategy at the Speed of Digital Business", Ian Cox, Irving Tyler, Noah Rosenstein, Peter Skyttegaard, refreshed on Feb 14, 2022

When you use questions like this to 'chunk down' digital manufacturing goals into tangible scenarios that offer obvious benefits, you give yourself targets that you can actually hit.

You create a direct path to value for your company.

Next, let's look at what it takes to bring each of these scenarios into being.

We'll begin with an honest look at the 'status quo' of most work instructions operations, and what's possible when you embark upon the direct path.

Moving from Manual to Automated, Electronic Work Instructions

For many manufacturers, the work instructions process is characterized by a 'spaghetti bowl' of disconnected, intersecting documents and files – as illustrated in the schematic on the following page.

In a pilot project, an Anark client achieved ZERO DEFECTS using electronic work instructions.

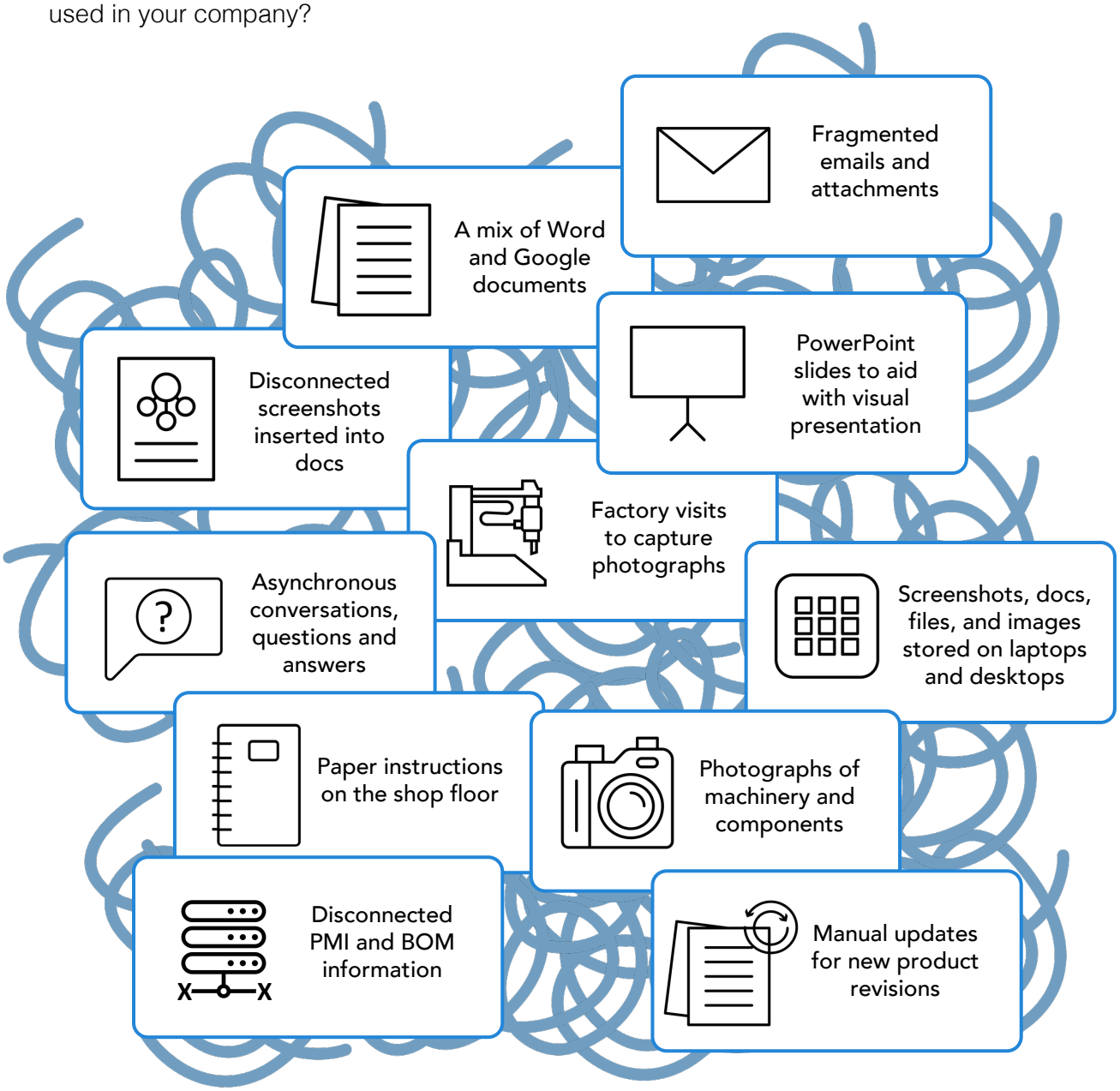
The control group, using traditional work instructions, produced defects amounting to $300,000 in scrap.

DID YOU KNOW?

The Journal of Organizational Management says management inertia may be a main factor impeding the move toward electronic work instructions.

Figure 1: The Typical Work Instructions Process

How many of these disconnected approaches to managing work instructions are being used in your company?

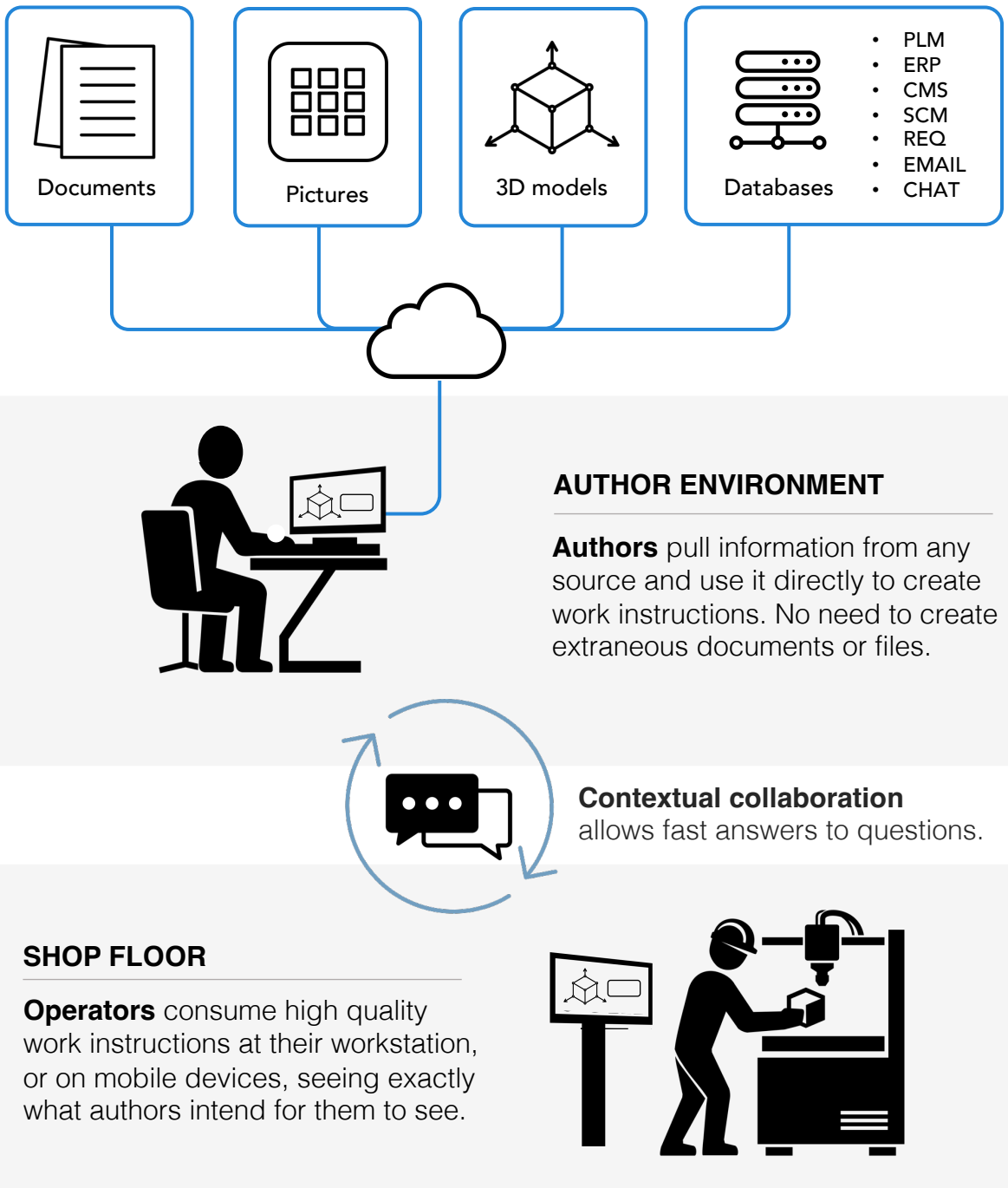


Some manufacturers add further disconnection from the digital thread by creating and maintaining paper work instructions. This means operators must leave workstations to access binders located throughout the shop floor.

In contrast, the direct path makes authoring and updating work instructions simple and streamlined, enabling authors to pull from a variety of data sources in a central authoring environment, as shown here:

Figure 2: The Direct Path to Managing Work Instructions

Engineering and other data is pulled from any source into a central authoring environment.

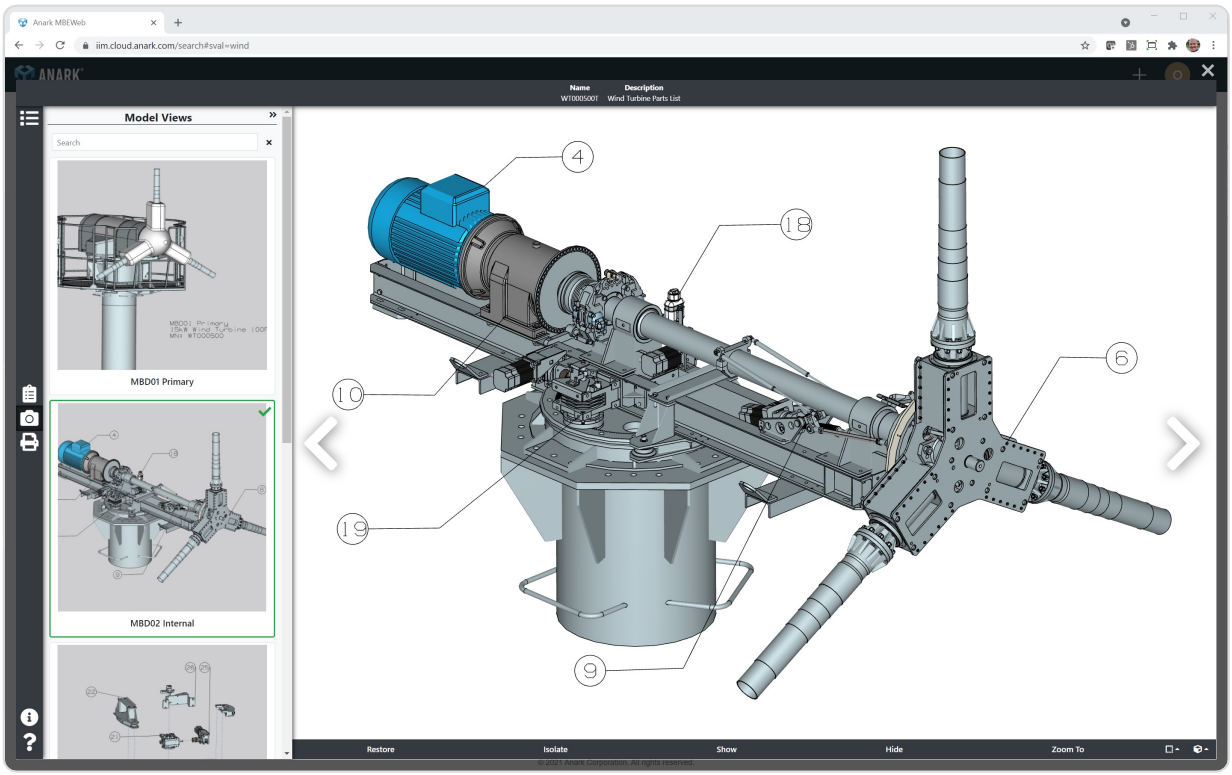


On a practical level, it eliminates the need for engineers and process planners to create extraneous files and documents, and frees them from the burden of chasing down and updating disconnected files when changes occur.

A centralized platform for publishing and accessing work instructions also centralizes communication, with chat features that allow for contextual conversations and quick answers to questions without relying on disconnected channels like phone and email.

Figure 3: High Fidelity Visual Electronic Work Instructions

Anark Core gives your operators direct access to technical data and visual information. Clear work instructions can feature CAD models, drawings, and any other product manufacturing information (PMI) and can be published directly to shop floor operators in an intuitive app-style interface with contextual collaboration features like comments, markups and chat.



The direct path removes all barriers to creating and accessing clear work instructions, and creates a faster path to realizing ROI and KPI gains, which we detail next.

ROI and KPI Gains: Benefits for Your People and Your Business

The premise of the ROI and KPI gains for manufacturers is simple: when you drastically improve the process of creating and sharing work instructions, and exponentially improve the quality of those instructions, performance gains and cost savings are the natural result.

Here's how performance gains and cost savings materialize, for your people and your business.

PEOPLE BENEFITS:

Secure, efficient integration and collaboration with suppliers and OEMs

1. **Authoring efficiency.** Spend less time searching, finding, copying, pasting, writing, and rewriting instructions. Spend more time focused on effective instructions.
2. **Security policy automation.** Set access policies once, and know the right people have access to the right information.
3. **Traceable, contextual collaboration.** Ask questions and get answers in the context of the work instructions to drive continuous process improvement.
4. **Training and production changeover optimization.** Ensure consistency between shifts by continuously applying learnings from one shift to instructions for all shifts.
5. **Recruitment and retention advantages.** Meet the expectations of the new workforce, who are accustomed to rich, interactive visuals and connected devices, and expect a digitized workplace.

> **"… digital and interactive tools could provide firms with an edge when recruiting young employees, who are regularly affine to digital media—an important issue in industrialized countries where demographic change and a shortage of skilled labor is apparent."**
>
> — *The Journal of Operations Management,* January 2022, Vol. 68, Issue 1

The day-to-day benefits for EWI authors and consumers are detailed here:

Figure 4: Benefits for Manufacturing Engineers and Operators

Here's how manufacturing engineers and operators benefit from automated, electronic work instructions in their day-to-day role.

Manufacturing Engineers

- Engineers can reuse CAD models and engineering IP to create hassle-free shop floor instructions. Anark Core allows for easy dissemination and automated recipes for rapid publication.
- Authors can easily draw from existing assets to create and embed illustrations and animations, dramatically reducing the amount of written explanation.
- The burden of creating separate files and documents is eliminated, minimizing any fracturing of the digital thread. All added pictures or animations remain connected and contextual.
- Authors save time with the ability to plan out assembly steps prior to the entire product release, with flexibility to make updates at any time.
- Automatic aggregation of product data from various systems reduces redundancy, solves version control issues, and frees engineers from the burden of manual updates and change management.

Operators

- Work instructions are easy to access and consume, in an intuitive mobile app-like environment. No expertise in PLM, ERP, or MES is required in order to access the rich data stored in those systems.
- Built-in contextual collaboration features such as chat and comments let operators ask questions and get real-time answers right alongside work instruction content. Significantly less time is spent waiting for conversations to resolve in isolated channels like phone or email.
- Easy-to-understand, highly visual instructions increase operator satisfaction.
- Simple, easy-to-use of work instructions leads to:
    - Operator productivity improvements
    - Reduction of training time
    - Improved knowledge retention
    - Decrease in changeovers time

BUSINESS BENEFITS:

Connect your processes to the digital thread to reduce manufacturing costs, enhance customer satisfaction, and improve delivery forecasts.

1. **Reduced scrap and rework.** Avoid mistakes by connecting people to one another, and to the up-to-date information they need to do their best work.
2. **Improved engineering error rate.** Update the entire team instantly, the moment any engineering errors are resolved.
3. **Concurrent engineering enablement.** Release work instructions iteratively, and get started on production earlier
4. **Improved on-time delivery.** Reduce operator training and changeover times for shortened overall production time.
5. **Improved quality.** Enable contextual collaboration between authors and operators for better comprehension of instructions and fewer mistakes.
6. **Reduced downtime.** Eliminate delays by automating the updating and publishing of work instructions, so operators always see the latest version.
7. **Improved delivery forecasts.** Hit targets for customer order deadlines with enhanced ability to forecast accurately.
8. **Reduced customer return rate.** Improve quality and drive down customer returns.

The list of benefits from taking the direct path ripples throughout the organization with improved performance, greater job satisfaction, and higher levels of customer satisfaction.

> **According to Gartner®, "…moving off of manual processes alone has resulted in a 40% faster improvement of time to execute tasks and an 80% reduction in mistakes for one manufacturer."**
>
> — Gartner, "Innovation Insight for the Connected Factory Worker," Simon Jacobson, Dana Stiffler, April 9, 2021

COST SAVINGS FROM MODEL-BASED DIGITAL WORK

Companies that leverage engineering data downstream with manufacturing and suppliers see substantial returns.

Scrap and rework are minimized. Production processes across the supply chain are streamlined. And everyone wins.

REAL WORLD OUTCOMES FOR MANUFACTURERS

Digital Work Instructions Reduce Scrap Rate to Zero, for $4 Million in Savings

One Anark client took scrap from 15% down to zero, using digital work instructions enabled by Anark Core.

Model-Based Digital Work Instructions Reduces Scrap to Zero

Instructions	Units	Cost/Unit	Scrap	Scrap Cost
MBWI	261	$ 105K	0%	0
2D	261	$ 105K	15%	$ 4,095K

Total Cost Avoidance: $ 4,095K

Electronic Work Instructions Produce Zero Defects

One Anark client performed a direct comparison between traditional and electronic work instructions. The study consisted of several built-to-order components, where half were made using traditional method and half using electronic work instructions enabled by Anark Core.

Results:

- The group using EWIs produced zero defects.
- The group using the traditional method made errors resulting in $300k in scrap.
- Operators overwhelmingly preferred EWI to the traditional method.

Gain a Competitive Edge by Starting Where You Are

Sidestepping complexity and fast tracking your KPI gains is easier when you take an iterative, start where you are approach to connecting the digital thread. The key is to actually get started.

As the Journal of Operations Management points out, there doesn't seem to be any good reason to delay your move to electronic work instructions. The only thing required is your own volition:

> **"Despite their advantageousness, the fact that digital instructions have not yet been widely adopted may be attributed to organizational inertia."**
>
> — *The Journal of Operations Management,* January 2022, Vol. 68, Issue 1

While this period of inertia is certainly temporary, it does afford a golden opportunity for manufacturers who want to gain competitive advantage over laggards—without delaying. That's where Anark can help.

Get a No-Obligation Assessment from the Industry Leader

Contact Anark for a **Direct Path Work Instruction Assessment** which includes:

- a 12-point questionnaire to assess your work instructions environment and identify areas for immediate gains,
- our proprietary KPI calculator to help you project gains for the metrics that are most important to your company, and
- a strategy evaluation to discuss model-based initiatives, if it applies. (Note, a model-based system is not required.)

Don't let inertia stop you from realizing the gains that are quickly attainable along the direct path.

Take the first step and book your Direct Path Work Instruction Assessment today.

The Anark Advantage

For 15 years, our team has dedicated itself to collaboration and innovation from product design to delivery to sustainment. We provide visual collaboration software for manufacturers. The Anark advantage stems from our desire to help our customers make their technical product data accessible and actionable for everyone who needs it.

We're redefining collaboration.

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